

### **REMARKS**

Upon entry of this Amendment, claims 16-24 and 27-63 are pending in this application. Claims 25 and 26 are canceled by this Amendment, in addition to the previous cancellation of claims 1-15. Claims 47-63 are added by this Amendment. Applicant thanks the Examiner for the indication of allowable subject matter in claim 34.

#### **102 Rejections**

The Examiner has rejected claims 16, 17, 22, 24, 25-29, 31-33, 35, 37, 40-42, 44, and 45 under 35 U.S.C. 102(b) as being anticipated by Lewis (GB 2,351,558). The Examiner states that Lewis teaches an optical sensor having first and second masks, the apertures of the first and second masks defining the viewing footprint of the optical sensor. The Examiner also states that Lewis teaches a light source arranged in the scanning head arranged to provide direct reflection and diffuse illumination of the paper substrate. Applicant respectfully disagrees.

Applicant has amended claim 16 to recite, among other things, a scanning head comprising first and second optical masks, a first light source for providing selective diffuse illumination of a web substrate, and a second light source for providing selective direct reflection illumination of the web substrate. The Examiner states on page 3, paragraph 5 of the Office Action that Lewis teaches a first light source for providing selective diffuse illumination of a web substrate, and a second light source for providing selective direct reflection illumination of the web substrate, citing to page 15, lines 1-3 and Fig. 11B of Lewis for that teaching. Applicant respectfully disagrees that Lewis teaches the use of two light sources for providing both diffuse and direct reflection illumination of the web substrate.

Lewis teaches the use of multiple LED illuminators of different colors to discriminate the color of printed spots coming within the field of view of the sensor (see page 7, paragraph 3 and page 14, paragraph 3). This allows for LEDs of different wavelengths to be focused on different regions to effect color correction. Further, with reference to page 14, line 29 – page 15, line 6, Lewis states:

The illuminator system, however, includes different wavelength LEDs 406b, 408b and the separate illumination regions 420b on the surface of the copy medium. In this embodiment, although there are separate illuminated regions for each color, only one is activated at a time. As the spot moves across each field, successive illumination zones are activated to prevent spots from outside the desired registration region from influencing the modulation signal resulting from the desired spot movement.

Nothing in the portion of Lewis pointed out by the Examiner, nor anything else in any other portion of Lewis, teaches or suggests the use of first and second light sources such that the first light source provides for selective diffuse illumination and the second light source provides for selective direct reflection of the web substrate, as recited in amended claim 16. Rather, Lewis teaches using multiple LEDs of different colors (wavelengths) for the purpose of differentiating colors within the spot to be illuminated. Applicant respectfully submits that Lewis does not teach each and every element of amended claim 16.

Thus, Applicant respectfully submits that claim 16 is allowable over Lewis. Claims 17-23 depend from claim 16 and are thus allowable for the same reasons as discussed above, as well as for other reasons not discussed herein.

Applicant has amended claim 24 to recite, among other things, a printing press having a scanning head comprising first and second optical masks, a first light source for providing selective diffuse illumination of a web substrate, and a second light source for providing selective direct reflection illumination of the web substrate. For the same reasons discussed above with respect to claim 16, Applicant respectfully submits that Lewis does not teach first and second light sources such that the first light source provides for selective diffuse illumination and the second light source provides for selective direct reflection of the web substrate, as recited in amended claim 24.

Thus, Applicant respectfully submits that claim 24 is allowable over Lewis. Claims 27-31 depend from claim 24 and are thus allowable for the same reasons as discussed above, as well as for other reasons not discussed herein.

Independent claim 32 recites, among other things, a scanning head comprising a first light source for providing selective diffuse illumination of a web substrate, a second light source for providing selective direct reflection illumination of the web substrate, and an optical mask having an aperture therethrough and passing light reflected from the web substrate. For the same reasons discussed above with respect to claim 16, Applicant respectfully submits that Lewis does not teach first and second light sources such that the first light source provides for selective diffuse illumination and the second light source provides for selective direct reflection of the web substrate, as recited in claim 32.

Thus, Applicant respectfully submits that claim 32 is allowable over Lewis. Claims 33-39 depend from claim 32 and are thus allowable for the same reasons as discussed above, as well as for other reasons not discussed herein.

Independent claim 40 recites, among other things, a scanning head including an optical sensor, a first light source for providing diffuse illumination of the web substrate, a second light source for providing direct reflection illumination of the web substrate, a first optical mask having an aperture therethrough for passing light reflected from the web substrate, and means for selecting between operation of the first light source, the second light source or both light sources. For the same reasons discussed above with respect to claim 16, Applicant respectfully submits that Lewis does not teach first and second light sources such that the first light source provides for selective diffuse illumination and the second light source provides for selective direct reflection of the web substrate, as recited in claim 40.

Thus, Applicant respectfully submits that claim 40 is allowable over Lewis. Claims 41-46 depend from claim 40 and are thus allowable for the same reasons as discussed above, as well as for other reasons not discussed herein.

### **103 Rejections**

The Examiner also rejected claims 18-21 and 23 under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Suda, et al. (U.S. 4,589,842). Claims 18-21 and 23 depend from claim 16, and are thus allowable over Lewis for the reasons discussed above with respect to claim 16, as well as for other reasons. Suda, et al. does cure the deficiencies of Lewis and thus the combination of Lewis and Suda, et al. does not teach or suggest each and every element of claims 18-21 and 23. Thus, Applicant respectfully submits that claims 18-21 and 23 are allowable over the cited art.

The Examiner also rejected claims 30, 38, 39, and 46 under 35 U.S.C. 103(a) as being unpatentable over Lewis. Claim 30 depends from claim 24, claims 38 and 39 depend from claim 32, and claim 46 depends from claim 40. Thus, claims 30, 38, 39, and 46 are allowable over Lewis for the reasons discussed above with respect to claims 24, 32, and 40, respectively, as well as for other reasons not discussed herein.

The Examiner also rejected claims 36, 38, and 43 under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Rabjohns, et al. (U.S. 5,439,199). Claims 36 and 38 depend

from claim 32, and claim 43 depends from claim 40. Thus, claims 36, 38, and 43 are allowable for the reasons discussed above with respect to claims 32 and 40, respectively, as well as for other reasons not discussed herein. Rabjohns, et al. does not cure the deficiencies of Lewis and thus the combination of Lewis and Rabjohns, et al. does not teach or suggest each and every element of claims 36, 38, and 43. Thus, Applicant respectfully submits that claims 36, 38, and 43 are allowable over the cited art.

### **New Claims**

New claim 47 is claim 34 rewritten in independent form, including the limitations of any base claims. No new subject matter is added in claim 47. The Examiner indicated in the Office Action that claim 34 would be allowable if rewritten in independent form. Thus, Applicant respectfully submits that new claim 47 is allowable over the cited prior art. Claims 48-52 depend from claim 47 and are thus allowable for the same reasons as claim 47, as well as for other reasons not discussed herein.

New claim 53 recites a scanning head suitable for use with a printing press in a print register mark detection apparatus for detecting register marks on a web surface, the scanning head comprising an optical sensor, a first optical mask spaced from the optical sensor, the first optical mask having an aperture therethrough, and a second optical mask with an aperture in series with the first mask, the apertures of the first and second masks together defining the viewing footprint of the optical sensor. The scanning head further includes a first light source for providing selective diffuse illumination of a web substrate, a second light source for providing selective direct reflection illumination of the web substrate, and a means for selecting between operation of the first light source, the second light source, or both light sources, wherein in the selecting means, the selection of the light sources is dependent upon the type of web substrate. Claim 53 defines additional patentable subject matter and no new matter is added by claim 53. As discussed in detail above with respect to claim 16, Lewis does not teach or suggest the use of first and second light sources as defined in claim 53. None of the other cited references cures the deficiencies of Lewis. Thus, Applicant respectfully submit that new claim 53 is allowable over the cited prior art. Claims 54-63 are allowable for the same reasons as claim 53, as well as for other reasons not discussed herein.

For each of these reasons, Applicant respectfully submits that claims 16-24 and 27-63 are allowable. Applicant respectfully requests withdrawal of the Examiner's rejections and allowance of claims 16-24 and 27-63.

The undersigned is available for telephone conference at any time.

Respectfully submitted,



Julie A. Zavoral  
Reg. No. 43,304

Docket No.: 077077-9174-00  
Michael Best & Friedrich LLP  
100 East Wisconsin Avenue  
Suite 3300  
Milwaukee, Wisconsin 53202-4108  
414.271.6560